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Supervised Object Segmentation and Tracking for MPEG-4 VOP Generation

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Sean Marlow, Noel E. O'Connor , Dublin City University

This paper presents an object-based segmentation and tracking scheme for video sequences. The probability density function (PDF) of each image to be segmented is modeled as a mixture of independent object PDFs. In the first image of the sequence, the parameters of the mixture are initially estimated based on user interaction. These parameters are then iteratively updated using the Expectation Maximization (EM) algorithm. A classification procedure applied to the results of the EM algorithm allows an object-based segmentation of the image to be constructed. In subsequent images of the sequence, the segmented objects are automatically tracked using motion estimation/compensation and a similar EM-based segmentation framework. Results indicate that accurate object segmentations and robust tracking can be obtained using this flexible approach.

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Peter Eisert, 15.04.2002

Publications

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